CLAIMS

1. A pressure monitoring device for a paint spray gun the pressure monitoring device comprising;

a housing having an air inlet, an air outlet and an air passage connecting the inlet and the outlet;

means for coupling the air inlet with an outlet of a compressed air supply and means for coupling the air outlet with an air inlet of a paint spray gun;

a digital pressure gauge housed in the housing and positioned to monitor pressure at a pressure take off point in the air passage;

a valve housed in the housing and operable to adjust air flow in the air passage;

valve adjustment means associated with the valve and accessible externally of the housing; wherein the air inlet, air outlet and air passage are shaped and the valve is positioned so as to provide minimal turbulence of air flow and minimal pressure drop through the device and the pressure take off point is downstream of the valve.

2. A pressure monitoring device as claimed in claim 1 wherein the air inlet and air outlet are arranged in line with each other.

3. A pressure monitoring device as claimed in claim 1 or 2 wherein air inlet and outlet comprises a pair of cavities, each cavity having a substantially circular cross sectioned portion adjacent the entry of the air inlet and exit of the air outlet and a substantially segmental cross sectioned portion adjacent the pressure take off point and passing through a plane which includes the valve seat, the substantially circular and segmental cross-sectioned portions being separated by a tapered section tapering from the circumference of

the circular cross sectioned portion to the chord of the segmental cross sectioned portion.

4. A pressure monitoring device as claimed in claim 3 wherein the cavities are arranged on either side of a longitudinal axis of the housing with the chords in substantially parallel alignment.

5. A pressure monitoring device as claimed in claim 3 or 4 wherein the air passage is provided in the form of a bore which passes through the two segmental sections and the pressure take off point is located in the bore.

6. A pressure monitoring device as claimed in claim 5 wherein the air passage bore has an axis which is substantially orthogonal to the longitudinal axis of the housing.

7. A pressure monitoring device as claimed in any of claims 3 to 6 wherein the tapered sections of the two cavities are at the same angle.

8. A pressure monitoring device as claimed in any of claims 3 to 6 wherein the tapered sections of the two cavities are at different angles.

9. A pressure monitoring device as claimed in any of claims 3 to 8 wherein the cavities are of substantially the same size and shape.

10. A pressure monitoring device as claimed in any of claims 3 to 9 wherein one or both of the segmental cross-sectioned portions terminate in a taper extending from the chord to the arc of the segment.

11. A pressure monitoring device as claimed in claim 10 wherein the chord surface of the segmental cross sectioned portion is longer than the arced surface.

12. A pressure monitoring device as claimed in claim 10 or 11 wherein the pressure take off point is situated in the segmental cross-sectioned portion.

13. A pressure monitoring device as claimed in claim 10 or 11 wherein the pressure take off point is situated in the taper.

14. A pressure monitoring device as claimed in any of claims 3 to 13 wherein the taper is at an angle of from about 30° to about 80° with respect to the longitudinal axis of the housing.

15. A pressure monitoring device as claimed in claim 14 wherein the taper is at an angle of between 55° and 80°.

16. A pressure monitoring device as claimed in claim 15 wherein the taper is at an angle of 60 ° at the inlet and 75 ° at the outlet.

17. A pressure monitoring device as claimed in any preceding claim wherein the digital gauge has a human readable display visible at a surface of the housing.

18. A pressure monitoring device as claimed in any preceding claim wherein the gauge display and valve adjustment means are arranged in line with each other on opposing surfaces of the housing and in a plane substantially orthogonal to the plane which contains the air inlet and air outlet.

19. A pressure monitoring device as claimed in any preceding claim wherein the housing, including the air inlet and air outlet is die cast or injection moulded.

20. A pressure monitoring device as claimed in claim 19 wherein the housing is die cast from zinc.

21. A pressure monitoring device as claimed in any preceding claim wherein the housing is engineered to have an IP66 casing integrity.

22. A pressure monitoring device as claimed in any preceding claim wherein the valve is a needle valve and the valve adjustment means a screw threaded knob.

23. A pressure monitoring device as claimed in claim 22 wherein the thread of the knob is selected to allow very fine adjustment of the air flow, increments of adjustment being at least comparable to the resolution of the pressure gauge.

24. A pressure monitoring device substantially as described herein and with reference to the accompanying Figures 1 to 9.

25. A paint spray gun having coupled to its air inlet, a pressure monitoring device as claimed in any of claims 1 to 24.

26. A gas flow passage comprising a pair of cavities, each cavity having a substantially circular cross sectioned portion adjacent the entry of the inlet and exit of the outlet of the passage and a substantially segmental cross sectioned portion, the substantially circular and segmental cross-sectioned portions being separated by a tapered section tapering from the circumference of the circular cross sectioned portion to the chord of the segmental cross sectioned

portion, the cavities being joined by a bore passing through each of the segmental cross sectioned portions.

27. A gas flow passage as claimed in claim 26 wherein the cavities are arranged on either side of a longitudinal axis of the housing with the chords in substantially parallel alignment.

28. A gas flow passage as claimed in claim 26 or 27 wherein the tapered sections of the two cavities are at the same angle.

29. A gas flow passage as claimed in claim 26 or 27 wherein the tapered sections of the two cavities are at different angles.

30. A gas flow passage as claimed in any of claims 26 to 29 wherein the cavities are of substantially the same size and shape and oriented in mirrored symmetry at 180° rotational separation about axis which passes perpendicularly to a common axis passing centrally through the aligned air inlet and air outlet.

31. A gas flow passage as claimed in any of claims 26 to 30 wherein one or both of the segmental cross-sectioned portions terminate in a taper extending from the chord to the arc of the segment.

32. A gas flow passage as claimed in claim 31 wherein the chord surface of the segmental cross sectioned portion is longer than the arced surface.

33. A gas flow passage having a shape substantially as illustrated in Figures 6 or 7.